

What is claimed is:

1. An  $\alpha$ -alumina powder wherein the average primary particle diameter is 10 to 100 nm, the content of an  $\alpha$  phase represented by the following formula:

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$$I_{(113)} / (I_{(113)} + I_{(200)}) \quad (1)$$

[wherein,  $I_{(113)}$  represents the peak intensity of a (113) plane of  $\alpha$ -alumina in an X-ray diffraction spectrum, and  $I_{(200)}$  represents the peak intensity of a (200) plane of  $\theta$ -alumina in an X-ray diffraction spectrum] is 90% or more, at least one first component  
10 selected from silicon, zirconium, phosphorus and boron is contained in an amount of 0.1 to 10 wt% in terms of oxide, and at least one second component selected titanium, iron and chromium is contained in an amount of 0.1 to 30 wt% in terms of oxide.

2. The  $\alpha$ -alumina powder according to Claim 1 wherein,  
15 further, the BET specific surface area is 20 m<sup>2</sup>/g or more.

3. The  $\alpha$ -alumina powder according to Claim 1 wherein the average primary particle diameter is 20 to 50 nm.

4. The  $\alpha$ -alumina powder according to Claim 1 wherein the content of an  $\alpha$  phase is 95% or more.

20 5. A method of producing an  $\alpha$ -alumina powder comprising calcining a mixture containing an aluminum-containing substance, particle growth retarder and seed crystal in an atmosphere of a partial pressure of water vapor of 600 Pa or less.

6. The method according to Claim 5 wherein the  
25 aluminum-containing substance is selected from transition alumina,

amorphous alumina, aluminum hydroxide, amorphous aluminum hydroxide, aluminum oxalate, aluminum acetate, aluminum stearate, ammonium alum, aluminum lactate, aluminum laurate, aluminum ammonium carbonate, aluminum sulfate, aluminum ammonium sulfate, aluminum nitrate and aluminum ammonium nitrate.

7. The method according to Claim 5 wherein the aluminum-containing substance is transition alumina or aluminum hydroxide.

8. The method according to Claim 5 wherein the particle growth retarder is selected from silicon compounds, zirconium compounds, phosphorus compounds and boron compounds.

9. The method according to Claim 8 wherein the silicon compound is selected from silicon oxide, tetramethyl silicate, tetraethyl silicate, aminomethyltriethoxysilane, di(aminomethyl)diethoxysilane,  $\gamma$ -aminopropyltrimethoxysilane and  $\gamma$ -aminopropyltriethoxysilane.

10. The method according to Claim 5 wherein the amount of the particle growth retarder is 0.1 to 10 wt% in terms of oxide based on the  $\alpha$ -alumina powder obtained by calcination.

11. The method according to Claim 5 wherein the seed crystal is selected from titanium compounds, iron compounds, chromium compounds,  $\alpha$ -alumina, aluminum nitride, aluminum carbide and diaspore.

12. The method according to Claim 11 wherein the titanium compound is titanium oxide, the iron compound is iron oxide, and

the chromium compound is chromium oxide.

13. The method according to Claim 11 wherein the seed crystal is titanium oxide.

14. The method according to Claim 5 wherein the amount of  
5 the seed crystal is 0.1 to 30 wt% in terms of oxide based on the  $\alpha$ -alumina powder obtained by calcination.

15. The method according to Claim 5 wherein the partial pressure of water vapor is 165 Pa or less.